

feet across, and the woody trunk at the base of the plant may measure three to four inches in diameter. The writer has tried to estimate the age of such an individual by counting the growth rings in the wood, but this is difficult since, as a consequence of very slow growth, little wood is laid down each year. The plant blossoms much after the fashion of *Acaena* or related genera, sending up, in late summer, small attractive spikes of rather inconspicuous white flowers.

It is hoped that a discussion of certain species characteristic of the vegetation of this area may be of value in calling attention to a few aspects of the flora that are perhaps not widely recognized. Many problems of a distributional nature are to be encountered in this region since it is a meeting place, so to speak, for floras of more or less distinctive adjacent areas. The intermountain region offers, therefore, a fine opportunity for a study of field botany from several points of view, particularly those dealing with origin, movement and distribution of native species.

Utah State Agricultural College,
Logan, November, 1935.

NOTES ON CALIFORNIA GRASSES

ROBERT F. HOOVER

During the spring and summer of 1935 collections were made by the writer in the San Joaquin Valley. Among these were many grasses found beyond their previously known range, and a few apparently distinct from anything yet described.

FESTUCA CONFUSA Piper. Vernalis, San Joaquin County, March 1, 1935, *Hoover 239*. This is to my knowledge the first record for the Great Valley although the species is frequent throughout central California, in both the Coast Ranges and the Sierra Nevada.

FESTUCA PACIFICA Piper, Contr. U. S. Nat. Herb. 10: 12. 1906. Rarely collected in the valley, but very common in many places, though never where the soil has been cultivated. The spikelets in most localities show all gradations from entirely glabrous or minutely scabrous to distinctly hairy.

FESTUCA PACIFICA Piper var. *ciliata* (Gray) Hoover comb. nov. *Festuca microstachys* Nutt. var. *ciliata* Gray; Beal, Grasses N. Amer. 2: 585. 1896. Quite common along the east side of the San Joaquin Valley, and on the west side at the north. Wherever I have found this variety, it intergrades completely with *Festuca pacifica* Piper: Madera (5 miles southeast), Madera County, March 30, 1935, *Hoover 475* and *476*. Collections from other regions including similar intergrading forms are the following: North Fork Eel River, Mendocino County, May 3, 1933, *Duran*

3395a; Trinity County, Tracy 7005; Kings River, July, 1902, Lemmon.

FESTUCA PACIFICA Piper var. *simulans* Hoover var. nov. Planta plerumque altior, 20–60 cm. alta; spiculis reflexis, 3–6 Fresno County to Kern County, where it is the dominant native floribus, saepissime glabris, vel interdum glumis pubescentibus, rarius etiam lemmatibus.

Abundant on the west side of the San Joaquin Valley from grass. Type collection: Blackwell's Corner (2 miles north), Kern County, March 30, 1935, Hoover 451 (Univ. Calif. Herb. no. 534130). Other representative collections are: Wasco (35 miles west), Kern County, April 7, 1926, Munz 10105; near Kettleman City, Kings County, March 30, 1935, Hoover 442a.

These plants have been referred to *F. reflexa* Buckl. and *F. microstachys* Nutt., which differ in having one to three flowers to a spikelet. The number of flowers in the spikelets, in which this variety resembles *F. pacifica*, seems to be a good specific character and of more importance than the reflexed spikelets. There is also a slight but significant difference in the glumes and in the shape of the lemmas between the *F. microstachys* and the *F. pacifica* groups. Furthermore, some specimens are intermediate between *F. pacifica* and var. *simulans*: Huron, Fresno County, March 23, 1893, Eastwood; Oro Loma (2 miles east), Fresno County, March 29, 1935, Hoover 402. A plant which is abundant at Bakersfield (April 26–May 30, 1896, Davy 1898) may belong here, but since I have not seen fresh specimens the number of flowers is uncertain because the spikelets break up on drying. In *F. pacifica* var. *simulans* as here described, the pubescence of the spikelets is too inconstant to justify even a separate varietal name based on that character. The type collection shows all degrees of pubescence. *F. pacifica* and its varieties may be distinguished by the following key.

KEY TO VARIETIES OF *FESTUCA PACIFICA*

Spikelets all divergent at maturity.....	<i>F. pacifica</i> var. <i>simulans</i>
Only principal panicle branches divergent.	
Spikelets glabrous or scabrous	<i>F. pacifica</i>
Spikelets pubescent	<i>F. pacifica</i> var. <i>ciliata</i>

PUCCINELLIA MARITIMA (Huds.) Parl. Flood-plain of Little Panoche Creek, western Fresno County, March 29, 1935, Hoover 477, growing in alkaline (gypsum) soil. The only other California collection seen is from Haywards, Alameda County, June, 1915, W. H. Nixon. Both agree well with the following collections: Sitka, Alaska, July, 1891, W. G. Wright 1585, 1593; Farsund, Norway, July, 1884, Murbecke; "hab. in paludosis, ad ripas

fl. Lukos, juxta el Araix, 1 majii 1930," *Font Quer 62* (Morocco).

ANTHOCHLOA COLUSANA (Davy) Scribn. *Stapfia colusana* Davy, *Erythea* 6: 110, pl. 3. 1898. Near Waterford, Stanislaus County, on the road to Oakdale, in dry beds of vernal pools, July 27, 1935, *Hoover 695*. This species has previously been known only from the type collection: "Goose-lands" near Princeton, Colusa County, May, 1898, *Davy* (Univ. Calif. Herb. no. 38962). Although the type is from an alkaline region, the soil at the present locality does not contain an appreciable amount of alkali.

— *Orcuttia inaequalis* Hoover sp. nov. Planta omnino pilosa; caulibus erectis vel ascendentibus, multis e basi, 2–15 cm. altis; spiculis 4–10 mm. longis, vel denique 2.5 cm. longis; lemmatibus 3–4 mm. longis, 5-dentatis; centrali dente subulato, reliquiis dentibus latioribus et brevioribus, duo interioribus lateralibusque dentibus longioribus quam exterioribus.

Confined to a narrow zone about half a mile wide and thirty miles long from Waterford, Stanislaus County, nearly to Merced, growing in dry beds of vernal pools. Type collection: Montpellier, Stanislaus County, May 28, 1935, *Hoover 582* (Univ. Calif. Herb. no. 534128). In a later collection from the same locality, July 22, *Hoover 690*, the spikelets are much longer and contain as many as thirty flowers. The earliest vernal leaves are filiform, as much as 15 cm. long, and presumably float on the surface of the pools. The later leaves are flat, short, and broad. *O. inaequalis* is very similar to *O. californica* Vasey of Southern California and Baja California, but in that species the lemma teeth are of equal length or the central tooth slightly longer and of the same width as the lateral.

SCHISMUS BARBATUS (L.) Chase. Huron (5 miles south), Fresno County, March 30, 1935, *Hoover 443*. This grass, appearing to be native, grows in sandy uncultivated places, associated with *Phacelia Fremontii* Torr., *Oenothera dentata* Cav., *Oenothera deltoides* Torr. et Frem., and *Abronia pogonantha* Heimerl. It proves to be, however, a species native to southern Europe, India, and Africa which, according to Hitchcock (*Man. Grasses* U. S. 276. 1935) has been introduced into southern Arizona. The species has not before been reported from California. My determination has been confirmed by Agnes Chase.

LEPTOCHLOA FASCICULARIS (Lam.) Gray. This species, said to occur in Kern and Fresno counties, is very common at least as far north as San Joaquin County in places made wet by irrigation, especially near rice fields. Collections: Modesto (10 miles south), Oct. 20, 1934, *Hoover 70*; Oakdale, Stanislaus County, July 27, 1935, *Hoover 700*.

PASPALUM DILATATUM Poir. Common on the borders of rice fields, as at Escalon, San Joaquin County, June 12, 1935, *Hoover*

642. This species, a native of South America, has previously been reported from Los Angeles.

AGROSTIS HENDERSONII Hitchc. A grass collected in a vernal pool 7 miles north of Merced, April 13, 1935, *Hoover 532a*, has been identified by Agnes Chase as this species. The only previous collection is the type: Sams Valley, near Gold Hill, Jackson County, Oregon, *Henderson 12,387*.

University of California, Berkeley,
September 30, 1935.

NEW CLOVERS FROM THE NORTHWEST

LOUIS F. HENDERSON

Trifolium idahoense sp. nov. Herba perennis, 5–8 cm. alta; folia omnia radicalia, 1–3 cm. longa, petiolis gracillimis; foliola 2–8 mm. longa obovata, rarissime obcordata, dente centrali longo, superne repando dentata; scapi gracillimi capitulis magnis comparati; flores plus minusve reflexi, vel saepe in sicco circulares; calyx glaucus, 4–5 mm. longus; dentibus glabris gracillimis, longitudine tubo aequantibus vel longioribus; flores magni purpurei, vexillo obovato apice rotundato, 12–15 mm. longo, alis parvis vexillo comparatis; legumine longo, aliquantum longostipitate, radix absens; caudex superne stipulis scariosis lanceolati-ovatis tectus; semina (ovula) 4 (in omnibus leguminibus visis), non 2 ut in *T. Kingii*.

Perennial, 5–8 cm. high, very glaucous and glabrous, somewhat assurgent: leaves all radical, 1–3 cm. long, with very slender petioles, leaflets 2–8 mm. long, obovate, very rarely obcordate with long, central tooth, repandly dentate above: scapes slender when compared with rather large few-flowered head; flowers two-thirds to one-half reflexed, or as often making a perfect circle when pressed; calyx glaucous, 4–5 mm. long, teeth very slender, as long as cup or slightly longer, glabrous; flowers large for size of plant, purple, banner 12–15 mm. long, obovate, top rounded, wings and keel small compared to banner: pod rather long-stipitate and long, all 4-seeded as far as seen: underground portion mainly lacking, the part collected a rootstock, its upper portion covered by the scarious lanceolate-ovate stipules: seed (ovules) 4, not 2 as in *T. Kingii*.

This is certainly near *T. Kingii*, but differs in the stem a scape, leaves smaller and never elongated, flowers less to not at all reflexed, with no extended rachis, or this when rarely formed, reduced to a short hair. The species was collected by the author in southern and southeastern Idaho, when on a col-